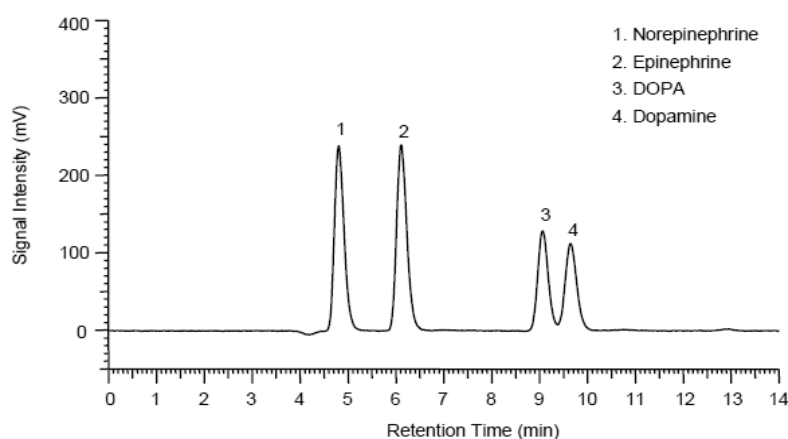


Analysis of Catecholamines Using the Hitachi LaChrom Elite® Liquid Chromatography System

Catecholamines are neurotransmitters that act within the sympathetic nervous system. They are biosynthesized from the amino acid tyrosine to L-DOPA, which is then enzymatically transformed into dopamine, norepinephrine, and epinephrine. Several molecules within this class have inherent fluorescence, and as such, can be detected with high sensitivity using a fluorescence detector. Here we describe a method for analysis of the catecholamines L-DOPA, dopamine, norepinephrine, and epinephrine using the Hitachi LaChrom Elite® liquid chromatography system with fluorescence detection.¹

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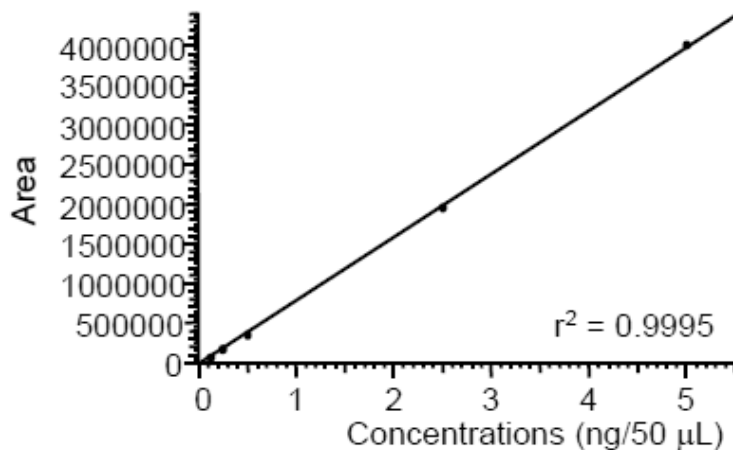
Results – Chromatogram of Standard Catecholamine Mixture



Experimental Conditions

Module	Conditions
Pump (L-2130)	Mobile Phase: 50 mM KH ₂ PO ₄ , pH 3.1 Flow Rate: 0.5 mL/min.
Autosampler (L-2200)	Injection Volume: 50 µL
Column	Hitachi LaChrom C18-AQ, 5 µm, 4.6 x 150 mm
Oven (L-2300)	Temperature: 40°C
Detector (L-2485)	Fluorescence Detector (Ex = 225 nm, Em = 310 nm)
Standard	4 catecholamine mixture, 2.5 ng/50 µL each

Results – DOPA Calibration Curve (0.125 ng/50 µL – 5 ng/50 µL)



Discussion

Hitachi's LaChrom Elite® liquid chromatography system is extremely effective at analysis of catecholamines. The system exhibits excellent sensitivity and a linear response over several orders of magnitude ($R^2 \geq 0.999$).

Reference:

1 – Technical Data LC090059_E, Hitachi High Technologies Corporation.

* LaChromElite is a registered trademark of Hitachi High Technologies America.

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